Claims

1. A fabric comprising: a yarn, said yarn comprising one or more sericin-extracted fibroin fibers, said fibers being biocompatible and non-randomly organized, wherein said yarn promotes ingrowth of cells around said fibroin fibers and is biodegradable.

2. The fabric as recited in claim 1, wherein the sericin-extracted fibroin fibers comprises fibroin fibers obtained from *Bombyx mori* silkworm.

3. The fabric of claim 1, wherein the sericin-extracted fibroin fibers retain their native protein structure and have not been dissolved and reconstituted.

4. The fabric of claim 1, wherein the fabric is non-immunogenic.

5. The fabric of claim 1, wherein the sericin-extracted fibroin fibers include less than 20% sericin by weight.

6. The fabric of claim 1, wherein the sericin-extracted fibroin fibers include less than 10% sericin by weight.

7. The fabric of claim 1, wherein the sericin-extracted fibroin fibers include less than 1% sericin by weight.

8. The fabric of claim 1, wherein the yarn has an ultimate tensile strength of at least 0.52 N per fiber.

9. The fabric of claim 8, wherein the yarn has a stiffness between about 0.27 and about 0.5 N/mm per fiber.

10. The fabric of claim 9, wherein the yarn retains 80% of its UTS when tested wet.

11. The fabric of claim 9, wherein the yarn has an elongation at break between about 10% and about 50%.

12. The fabric of claim 11, wherein the yarn has a fatigue life of at least 1 million cycles at a load of about 20% of the yarn's ultimate tensile strength.

13. The fabric of claim 1, wherein the yarn comprises parallel or intertwined sericin-extracted fibroin fibers.

14. The yarn of claim 13, wherein said yarn comprises at least three aligned sericin-extracted fibroin fibers.

15. The yarn of claim 14, wherein the aligned sericin-extracted fibroin fibers are intertwined.

16. The yarn of claim 15, wherein the yarn is a braid, textured yarn, twisted yarn, cabled yarn, and combinations thereof.

17. The yarn of claim 16, wherein the aligned sericin-extracted fibroin fibers are twisted or cabled about each other at 0 to 11.8 twists per cm.

18. The fabric of claim 1, further comprising a yarn having a single-level hierarchical organization, said single-level hierarchical organization comprising a group of parallel or intertwined yarns.

19. The fabric of claim 1, further comprising a yarn having a two-level hierarchical organization, said two-level hierarchical organization comprising a bundle of intertwined groups.

20. The fabric of claim 1, further comprising a yarn having a three-level hierarchical organization, said three-level hierarchical organization comprising a strand of intertwined bundles.

21. The fabric of claim 1, further comprising a yarn having a four-level hierarchical organization, said four-level hierarchical organization comprising a cord of intertwined strands.

22. The fabric of claim 1, wherein the yarn is twisted at or below 30 twists per inch.

23. The fabric of claim 1, wherein a plurality of the yarns are intertwined to form a fabric.

24. The fabric as recited in claim 1, wherein the fabric comprises a composite of the sericin-extracted fibroin fibers and one or more degradable polymers selected from group consisting of Collagens, Polylactic acid or its copolymers, Polyglycolic acid or its copolymers, Polyanhydrides, Elastin, Glycosamino glycans, and Polysaccharides.

25. The fabric of claim 20, wherein a plurality of yarns are non-randomly organized into a fabric selected from the group consisting of, woven fabrics, knit fabrics, warp knit fabrics, bonded fabrics, coated fabrics, dobby fabrics, laminated fabrics, mesh and combinations thereof.

26. The fabric of claim 20, wherein a plurality of yarns are randomly organized into a non-woven fabric.

27. The fabric of claim 1, further comprising a drug associated with the fabric.

28. The fabric of claim 1, further comprising a cell-attachment factor associated with the fabric.

29. The fabric of claim 28, wherein the cell-attachment factor is RGD.

30. The fabric of claim 1, wherein the fabric is treated with gas plasma.

31. The fabric of claim 1, further comprising biological cells seeded onto the fabric.

32. A method for forming a fabric comprising:
    a. aligning fibroin fibers in parallel or intertwined with other fibroin fibers to form a yarn,
    b. substantially removing sericin from the fibroin fibers without substantially altering the native structure of fibroin in the fibers,
    c. and organizing a plurality of yarns to form a fabric.

33. The method of claim 32, further comprising intertwining the parallel silk fibers before the sericin is extracted.

34. The method of claim 32, further comprising intertwining the parallel silk fibers after the sericin is extracted.

35. The method of claim 32, further comprising aligning multiple fibroin fibers into yarns, wherein each yarn comprises at least three parallel or intertwined fibers.

36. The method of claim 35, wherein the fibroin fibers of each yarn are twisted about each other at 0 to 11.8 twists per cm.

37. The method of claim 32, wherein multiple yarns are twisted about each other at 0 to 11.8 twists per cm.

38. The method of claim 32, wherein sericin is extracted from no more than about 50 parallel or intertwined fibroin fibers.

39. The method of claim 32, wherein the yarn is twisted at or below 30 twists per inch.

40. The method of claim 32, further comprising forming a knit or woven fabric from a plurality of non-randomly organized yarns.

41. The method of claim 32, further comprising forming a non-woven fabric from a plurality of randomly organized yarns.

42. The method of claims 40 and 41, wherein the fabric is formed after sericin is extracted from the fibers in the yarns.

43. The method of claims 40 and 41, wherein the fabric is formed before sericin is extracted from the fibers in the yarns.

44. The method of claims 40 and 41, wherein the yarn is exposed to a force no greater than its yield point.

45. The method of claim 32, further comprising associating a drug with the fabric.

46. The method of claim 32, further comprising associating a cell-attachment factor with the fabric.

47. The method of claim 46, further comprising associating RGD with the fabric.

48. The method of claim 32, further comprising treating the fabric with gas plasma.

49. The method of claim 32, further comprising:
sterilizing the fabric.